

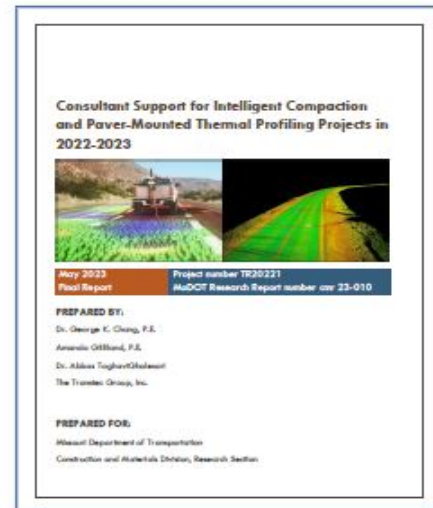
Research Summary

Consultant Support for Intelligent Compaction and Paver-Mounted Thermal Profiling Projects in 2022-2023

MoDOT's Intelligent Compaction and Paver-Mounted Thermal Profiling (IC-PMTP) projects (2017-2021) demonstrated paving quality improvements on numerous field projects. Therefore, MoDOT established a plan to include additional IC-PMTP projects in 2022 and 2023. The primary goal of this project was to ensure the continued success of the MoDOT IC-PMTP projects in 2022 and beyond. MoDOT procured consulting support (this project) for selected IC-PMTP projects in 2022-2023 and continued with many initiatives, such as data quality assurance (QA), performance tracking, and future acceptance with IC-PMTP data.

This project's Scope of Work (SOW) included seven (7) main tasks from March 2022 to April 2024, spanning approximately 26 months. This report is a summary of the completed work in 2022, and the work completed during 2023 will be included in a future report.

Year-to-year trends in IC-PMTP data results show higher IC pass count coverage, lower and less severe temperature segregation in the asphalt mat, and consistent compaction temperatures since implementation in 2017. These trends indicate that intelligent construction technologies improve successful construction practices, which may lead to higher-quality pavements.



IC-PMTP protocols were revised minimally to address some issues found in the 2020-2021 projects. The updates included changes to the IC-PMTP summary sheet and data QA procedures as described in the report. Several changes were made to the ICT data QA program based on lessons learned from piloting original methods during previous seasons.

“Year-to-year trends in IC-PMTP data results show higher IC pass count coverage, lower and less severe temperature segregation in the asphalt mat, and consistent compaction temperatures since implementation in 2017.”

Highlights in 2022 include the following:

- Successful implementation of an enhanced training program.
- Enhanced training materials for MoDOT inspection staff, including guides to check contractor submittals and collect verification data.
- Successful project supports and data quality checks, including data QA support.



- Successful use of LiDAR data to collect boundary measurements (in place of hand-held equipment).
- Successful data QA procedures show that the proposed methods are acceptable tools for data verification. Some challenges related to data collection persist but are reduced from previous years.

The implementation of data QA is critical to MoDOT's full IC-PMTP implementation. Data QA will continue to be a key focus in 2023 and beyond, and training and technical support will be critical for successful implementation.



Figure 1: A Dirtmate Gen 3 is mounted on a rental car with the new DUG nearby to send data to the cloud.

Project Information

PROJECT NAME: TR202212—Consultant Support for Intelligent Compaction and Paver-Mounted Thermal Profiling Projects in 2022-2023

PROJECT START/END DATE: March 2021-April 2024

PROJECT COST: \$418,073

LEAD CONTRACTOR: The Transtec Group, Inc.

PRINCIPAL INVESTIGATOR: George Chang

REPORT NAME: Consultant Support for Intelligent Compaction and Paver-Mounted Thermal Profiling Projects in 2022-2023

REPORT NUMBER: cmr 23-010

REPORT DATE: May 2023

Project Manager



CONTACT INFORMATION:

Scott Breeding
Senior Research Analyst
Missouri Dept. of Transportation
1617 Missouri Blvd.
Jefferson City, MO 65109
(573) 526-4325
Scott.Breeding@modot.mo.gov